REMARKS

Claims 1-7 remain pending after amendment.

Claim Amendments

By this amendment, claim 1 is amended. New claims 5-7 are added. No new matter is added by this amendment.

Request for Initialed Form PTO-1449

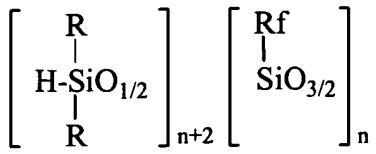
Applicants request an initialed copy of Form PTO-1449 in response to the Information Disclosure Statement filed on December 22, 2003. The Examiner is thanked in advance for his assistance on this point.

Applicants' Invention

Applicants' invention is directed to a curable fluoropolyether composition comprising

(A) a base polymer consisting of a fluoropolyether compound containing alkenyl radicals in a concentration of $3x10^{-5}$ to $5x10^{-3}$ mol/g and having a fluorine content of at least 40% by weight, the alkenyl radicals being attached either directly to both ends of the backbone of the fluoropolyether compound,

(B) a crosslinking agent or chain extender consisting of an organosilicon compound having the average compositional formula (1):



(1)

wherein R is an alkyl radical of 1 to 3 carbon atoms, Rf is a partially fluorinated alkyl radical of 3 to 16 carbon atoms or a partially fluorinated, ether bond-containing monovalent saturated radical, and n has an average value of 1.5 to 6.0, and

(C) a hydrosilylation catalyst,

with components (B) and (C) being used in effective amounts for component (A) to cure.

Rejection under 35 USC 103(a)

Claims 1-4 stand rejected under 35 USC 103(a) as being unpatentable over Fukuda et al in view of Maxson et al. This rejection is respectfully traversed.

The present invention is directed to the use in combination of (A) a fluoropolyether compound containing alkenyl radicals in a concentration of $3x10^{-5}$ to $5x10^{-3}$ mol/g and having a fluorine content of at least 40% by weight, the alkenyl radicals being attached either directly to both ends of the backbone of the fluoropolyether compound and (B) the specific organosilicon compound of formula (1) as a crosslinking agent (curing agent) which can be fully dissolved in the fluoropolyether compound having a high fluorine content.

When such a curing agent which is fully dissolvable even in a fluoropolyether compound having a high fluorine content is compounded, there is obtained a composition having a low viscosity, smooth flow, and transparency (free of turbidity) The claimed invention is neither disclosed nor suggested by the cited prior art.

Fukuda discloses an addition curable perfluoro compound-containing composition comprising:

(A) a linear perfluoro compound containing at least two alkenyl groups per molecule and having a perfluoro structure in its backbone chain, typically represented by $CH_2=CH-(X)_a-Rf^1-(X)_a-CH=CH_2$,

(B) a linear perfluoro compound containing one alkenyl group per molecule and having a perfluoro structure in its backbone chain, typically represented by $Rf^2-(X)_a-CH=CH_2$,

(C) an organosilicon compound containing at least two hydrosilyl groups per molecule, and

(D) a platinum family metal catalyst.

Component (A) of Fukuda corresponds to component (A) of the present invention.

However, Fukuda further uses as an alkenyl group-containing perfluoro compound the linear perfluoro compound containing one alkenyl group per molecule (B). That is, in Fukuda, two alkenyl group-containing perfluoro compounds of components (A) and (B)

are used in order to form a cured gel product having a penetration of 1 to 200 according to ASTM D-1403 using 1/4-scale cone.

By contrast, the claimed inventive composition does not contain the linear perfluoro compound containing one alkenyl group per molecule.

In the present invention, a base polymer **consists of** a fluoropolyether compound containing alkenyl radicals in a concentration of $3x10^{-5}$ to $5x10^{-3}$ mol/g and having a fluorine content of at least 40% by weight, the alkenyl radicals being attached to both ends of the backbone of the fluoropolyether compound.

According to the present invention, a rubber (not a gel as taught by the art) is obtained.

Moreover, as is apparent from the description at columns 7 and 8 of Fukuda, the inventive organosilicon compound of formula (1) is not disclosed in Fukuda at all.

The additionally-cited Maxson reference does not cure the deficiencies of Fukuda.

Maxson discloses a method for controlling cure initiation time and curing time of a platinum group metal curable fluorosilicone composition, the method comprising forming a fluorosilicone composition comprising

(A) 100 parts of a fluorine-containing polydiorganosiloxane comprising at least two alkenyl radicals per molecule, and repeating units described by formula R^1R^fSiO and optionally R^1R^2SiO, where R^1 is an alkyl radical comprising from one to about four carbon atoms, R^2 is an alkenyl radical comprising from two to about 10 carbon

atoms, and R^f is a perfluoroalkyethyl radical comprising from three to about 12 carbon atoms,

(B) 10 to 70 weight parts of a treated reinforcing silica filler,

(C) an amount of a platinum group metal-containing hydrosilation catalyst sufficient to effect curing of the composition, and

(D) a crosslinker mixture comprising an alkylhydrogensiloxane comprising at least 3 silicon-bonded hydrogen atoms per molecule with the remaining bonds of the silicon atoms being to oxygen or alkyl radicals comprising one to four carbon atoms and a dialkylhydrogen perfluoroalkylethylsiloxane; controlling the weight ratio of the alkylhydrogensiloxane to dialkylhydrogen perfluoroalkylethylsiloxane within a range of about 0.1:1 to 9:1 to control cure initiation time and curing time; and curing the fluorosilicone composition.

In more preferred embodiments, the reference provides for the the weight ratio of the alkylhydrogensiloxane to dialkylhydrogen perfluoroalkyl-ethylsiloxane being within a range of about 1:3 to 3:1.

The disclosed fluorine-containing polydiorganosiloxane is a polymer described by the formula

$$QSi(OSiR^1R^2)_a(OSiR^1R^f)_b Q;$$

where each R^1 is an independently selected alkyl radical comprising from one to about four carbon atoms, each R^2 is an independently selected alkenyl radical comprising from

two to about 10 carbon atoms, R^f is a perfluoroalkylethyl radical comprising from three to about 12 carbon atoms, each Q is independently selected from a group consisting of R^1, R^2, and OH, $a \geq 0$, $a/(a+b) = 0$ to 0.05, and a+b is a value such that the polymer has a Williams plasticity number within a range of about 75 mm/100 to 400 mm/100 at 25°C.

The reference teaches the use of an alkylhydrogensiloxane described by the formula

$$R^1{}_3Si(OSiR^1{}_2)_e(OSiR^1H)_fOSiR^1{}_3,$$

where each R^1 is an independently selected alkyl radical as previously described, $e > 0$, $f = 3$ to 200, and $e+f = 3$ to 200, where R^1 is methyl, $e+f = 6$ to 20, and $f/(e+f) > 0.6$.

An alkylhydrogensiloxane is also taught as described by the formula

$$\boxed{(R^1{}_2SiO)_g(R^1HSiO)_h},$$

where each R^1 is an independently selected alkyl radical as previously described, $g = 0$ to 18, $h = 3$ to 20, and $g+h = 4$ to 20, and where R^1 is methyl, $g = 0$, and $h = 4$ to 7.

The alkylhydrogensiloxane is also taught as being described by the formula

$$Si(OSiR^1{}_2H)_4,$$

where each R^1 is an independently selected alkyl radical as previously described, with R^1 being methyl.

The dialkylhydrogen perfluoroalkylethylsiloxane is further taught as being described by the formula

$$HR^1_2SiO\left[\begin{array}{l} Rf \\ SiO \\ O \\ SiR^1_2H \end{array}\right]_n SiR^1_2H$$

where each R^1 is an independently selected alkyl radical as previously described, each R^f is an independently selected perfluoroalkylethyl radical as previously described, and n = 1 to 12.

The alkylhydrogensiloxane is taught as being described by formula

$$(R^1_3SiO_{1/2})_i(R^1_2SiO_{2/2})_j(R^1HSiO_{2/2})_k(R^1SiO_{3/2})_m,$$

where each R^1 is an independently selected alkyl radical as previously described, i = 6 to 20, j = 15 to 45, k = 30 to 80, and m = 2 to 6. The dialkylhydrogen perfluoroalkylethylsiloxane is taught as being represented by:

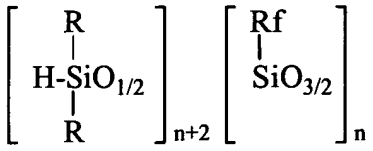
$$HR^1_2SiO\left[\begin{array}{l} Rf \\ SiO \\ O \\ SiR^1_2H \end{array}\right]_n SiR^1_2H$$

Applicants' acknowledge that the above dialkylhydrogen perfluoroalkylethylsiloxane of Maxson corresponds to component (B) of the present invention.

However, Maxson uses two crosslinkers, i.e., a crosslinker mixture comprising an alkylhydrogensiloxane comprising at least 3 silicon-bonded hydrogen atoms per molecule with the remaining bonds of the silicon atoms being to oxygen or alkyl radicals comprising one to four carbon atoms and a dialkylhydrogen perfluoroalkylethylsiloxane;

controlling the weight ratio of the alkylhydrogensiloxane to dialkylhydrogen perfluoroalkylethylsiloxane within a range of about 0.1:1 to 9:1 to control cure initiation time and curing time; and curing the fluorosilicone composition.

On the other hand, in the present invention, the crosslinker **consists of** an organosilicon compound having the average compositional formula (1):



(1)

wherein R is an alkyl radical of 1 to 3 carbon atoms, Rf is a partially fluorinated alkyl radical of 3 to 16 carbon atoms or a partially fluorinated, ether bond-containing monovalent saturated radical, and n has an average value of 1.5 to 6.0.

Accordingly, the invention does not use an alkylhydrogensiloxane according to Maxson.

According to the present invention, component (A) is completely cured only by the above-defined component (B).

Thus, the present invention is neither disclosed nor suggested by the cited prior art, taken either singly or together.

The rejection is thus without basis, and should be withdrawn.

The application is in condition for allowance, and an early indication of same is earnestly requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Andrew D. Meikle (Reg. No.32,868) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: June 16, 2006

Respectfully submitted,

By _____

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